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AUTHOR Levine, Daniel O.

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ABSTRACT

Attitudes of pharmacists and pharmacy students were measured by a 73-item questionnaire. Responses were obtained from 56 graduating seniors and 112 recent graduates of the School of Pharmacy of the University of Missouri at Kansas City. The two sets of responses enable comparison of the attitudes of graduating seniors after completion of a field-based externship and those of pharmacists who have been professional practitioners either two or three years. Factor analysis of the responses supported the construction of 11 scales measuring the following aspects of attitudes regarding pharmacy practice and preparation: pharmacy as a profession; patient medication records; over-the-counter drugs; Rx medications; patient-pharmacist relationships; physician-pharmacist relationships; management of a pharmacy; pharmacists' responsibilities for drug use; adequacy of preparation at the school of pharmacy; and school of pharmacy curriculum. All of the items had five response categories varying from "strongly agree" to "strongly disagree." The results indicate that the two respondent groups generally share similar attitudes as measured by the questionnaire, and both groups tended to respond to items with answers considered to represent "desirable" attitudes. However, respondents indicated some uncertainty regarding their preparation for instituting new programs in a hospital pharmacy and for analyzing and changing managerial operations in a community pharmacy, and regarding the adequacy of the pharmacy curriculum. (SW)

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ATTITUDES OF GRADUATING PHARMACY STUDENTS AND PRACTICING PHARMACISTS

Dr. Daniel U. Levine, Professor of Education
and Director of the Center for the Study
of Metropolitan Problems in Education

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SAMPLE AND INSTRUMENT

The purposes of this paper are to report data on the development of a questionnaire to measure the attitudes of pharmacists and pharmacy students and to compare the responses of the two groups on the questionnaire as a whole and its component items.

The questionnaire is a 73-item instrument dealing with respondents' attitudes regarding a variety of issues in pharmacy education and the practice of pharmacy. The 73 items were designed to assess student attitudes on ten types of issues which can be categorized under the following headings:

1. Pharmacy as a Profession - 7 items.
2. Patient Medication Records - 6 items.
3. Over the Counter Drugs - 6 items.
4. Rx Medications - 7 items.
5. Patient-Pharmacist Relationships - 7 items.
6. Physician-Pharmacist Relationships - 7 items.
7. Management of a Pharmacy - 9 items.
8. Pharmacists' Responsibilities for Drug Use - 7 items.
9. Adequacy of Preparation at the School of Pharmacy - 6 items.
10. School of Pharmacy Curriculum - 11 items.

All of the items had five response categories as follows: Strongly Agree; Agree; Uncertain-Neutral; Disagree; and Strongly Disagree. Items for which agreement was considered desirable were scored with a five for "Strongly Agree" and a one for "Strongly Disagree." Items for which disagreement was considered to be the desirable response were scored in the opposite direction. Therefore a "high" or desirable score on each item is represented by a high numerical score.*

*This is not true, however, for the last 7 items, for which the "desirable" score is 2 (the "right amount" of a curriculum component) and scores of 1 ("Need Less") and 3 ("Need More") are "undesirable."

The actual questionnaire is reproduced as Appendix A.

The questionnaire was administered to 56 graduating seniors at the UMKC School of Pharmacy in the late summer of 1978, just after they had completed eight weeks of externship assignment at pharmacies in Western Missouri. The questionnaire also was sent by mail in the spring of 1979 to 131 practicing pharmacists who had graduated from the School of Pharmacy in 1975 and 1976. One hundred and twelve - 85 percent of the practicing pharmacists - returned the questionnaires. Thus the two sets of responses enable us to compare the attitudes of graduating seniors after they had completed a field-based externship with those of pharmacists who had been professional practitioners either two or three years. This in turn means that we can examine the issue of whether attitudes change during the first two-to-three years in the profession. However, it must be kept in mind that we do not have a longitudinal sample (one group of respondents tested two or three years apart); therefore, caution must be exercised in interpreting our results.

ANALYSIS

Factor Analysis

The first step in our analysis was to perform a factor analysis on each set of items in the ten categories described above in order to determine whether items within each category could be added together to form scales reflecting one general attitude underlying all or some of the items. The factor analysis was carried out by performing a principal components analysis with unity in the matrix diagonal for each of the ten sets of items, and then performing a varimax rotation. This procedure was followed separately for the pre- and post-test administrations of the questionnaire. The principal factor loadings* for the ten sets of items are shown in Table 1, Part A through J.

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*Factor loadings can be considered as representing the correlation between an item and an underlying construct responsible for correlations among a group of items in which the item in question is included.

There are no set rules for deciding whether the results of a factor analysis indicate that a group of items should or should not be summarized by one score. Because the items in each category had been explicitly constructed to constitute a set, we decided they should be added together in this exploratory study if they met relatively minimal requirements for correlation with others in the set. Accordingly, we decided generally to keep items together if they loaded at .35 or above with other items in the set in both the student and the practitioner factor analysis. The factor loadings, along with item means and standard deviations, are shown in Table 1. Application of this approach led us to construct 11 equal-weighted scales which are described below.

Table 1 about here

1. Positive vs. Negative Attitudes Toward Pharmacy as a Profession.

This scale included all seven items dealing with pharmacy as a profession, all of which loaded at .35 or higher for both groups. The highest loading item for both groups stated that "The practice of pharmacy is a profession in which one can use his/her education to help sick people."

2. Emphasis on Maintenance of Patient Medication Records.

Items 1, 2, 5, and 6 from the set of attitudes dealing with patient medication records were added together to constitute this scale. The highest loading item was "Patients receive better health care at pharmacies which maintain patient medication records." It should be noted that the four items which loaded above .35 on the factor all were worded in a positive direction, while the two items which did not load on the principal factor were worded in a negative direction. Thus it seems possible that loadings on the factor are reflecting a response set which may lead some respondents to agree quickly with positively worded items but pause and consider more fully those items which are worded in a negative direction.

3. Positive vs. Negative Attitudes Regarding Pharmacist Behavior Concerning Over the Counter Drugs.

Items 1, 2, and 5 from the set of six items dealing with pharmacists and over-the-counter drugs were added together to form this scale. The highest loading item across both groups was "In my opinion most pharmacists readily ask the patient about symptoms when advising about OTC drugs."

4. Pharmacist Role in Informing Patients About Rx Medications.

Items 2, 3, 4, 6, and 7 dealing with Rx medications were added together to form this scale. The highest loading item across both groups was "Patients may become alarmed about the physician's choice of drug if the pharmacist advises them regarding the toxicity of the drug." Items on the scale tap differing aspects of the pharmacist's responsibilities and influence in advising patients about Rx medications.

5. Positive vs. Negative View of Patient Behavior Related to Pharmacists' Advice.

The first six items dealing with patient-pharmacist relationships were added together to form this scale. The highest loading item across both groups was "Most patients are quite willing to discuss their symptoms with the pharmacist." These items appear to tap viewpoints concerning whether patients are open to receive information and suggestions regarding the appropriate use of drugs.

6. Positive vs. Negative View of Physician Behavior with Respect to Drugs.

All seven items dealing with physician-pharmacist relationships were added together to form this scale. The highest loading items across both groups were "In my opinion most pharmacists readily accept the pharmacist's suggestions on drug choice," "Most physicians appreciate pharmacists advising them about drug interactions," and "Physicians regard pharmacists' advice on treatment as an encroachment of their field of experience." The items seem to tap viewpoints concerning whether physicians are open to information and suggestions regarding the appropriate use of drugs.

7. Wide vs. Narrow Definition of Pharmacists' Managerial Responsibilities.

All but the fourth item in the set of 9 items dealing with management of a pharmacy were added together to form this scale. The eight items, all of which had loadings of at least .54 for both groups of respondents, represent diverse management skills that a pharmacist might need to master to operate a pharmacy successfully.

8. Active vs. Passive Pharmacist Role in Dispensing Drugs.

All seven items dealing with pharmacists' responsibilities for drug use were added together to form this scale. Each of the items had loadings of at least .46 for both groups of respondents. The eight items describe a variety of ways in which a pharmacist can make a special effort to ensure that drugs are used appropriately.

9. Adequate vs. Inadequate Preparation at the School of Pharmacy.

Two separate scales were constructed based on the 6 items dealing with adequacy of preparation at the School of Pharmacy. The first used items 1, 2, and 4, following an examination of the loadings which showed that each item loaded at .74 or better for each group of respondents. The three items portray differing aspects of respondents' perceptions concerning the degree to which they felt adequately prepared to begin practicing pharmacy.

10. Adequate vs. Inadequate Preparation for a Hospital Pharmacy.

Items 3 and 5 were added together to form this sub-scale after the varimax factor rotation (not shown in this report) indicated that these two items dealing with hospital pharmacies formed a separate orthogonal factor. Each loaded at .88 or better on a two-item orthogonal factor for both groups. Both items dealt with adequacy of preparation for a hospital pharmacy.

11. Positive vs. Negative Views of the School of Pharmacy Curriculum.

The first four of the set of 11 items dealing with the School of Pharmacy curriculum were added together to form this scale. All four items tap general

perceptions of the curriculum by asking whether it provides sound preparation for the practice of pharmacy today and in the future. It should be recalled that the remaining seven items, which did not load on the principal factor, deal with specific components of the curriculum and use different rating categories (scored 1 to 3 rather than 1 to 5) than did the preceding 66 items.

It should be noted that factor profiles for the two groups of respondents were generally similar. For example, loadings for the students were within twenty percentage points of the loadings for the practicing pharmacists on 46 of the first 66 items on the questionnaire. In addition, there were only seven items among the first 66 for which scores "loaded" (by our criterion of .35 or higher) for one group but not the other, and the percentages of variance explained by the principal factors were within ten points of one another on ten of the eleven sets of factor runs for the two groups. The similarity of results from the factor analysis for the two groups also supports the conclusions that the principal factors identified in this study are stable ones which can be expected to appear with other samples and that the data collected from our respondents are reasonably reliable.

General Response Level

Before proceeding to compare scores of the two groups of respondents on the scales and the individual items, we should call attention to the general level of response to the items and the questionnaire as a whole. By definition, a high score was considered to be a "desirable" response and a low score was considered to be undesirable, with scores ranging from 1 to 5 on the first 66 items. Examination of the data in Table 1 supports the following conclusions:

1. Scores on attitudes regarding pharmacy as a profession generally were high--usually over 4 on the five-point scale. For both groups, the lowest scores were for the items "One who practices pharmacy as a profession can expect to be a financial success" and "If I were just graduated from high school I would still enter the pharmacy profession."

2. Scores on attitudes concerning patient medication records generally were high--usually over 3.00. For both groups, the only item for which this is not true states that "The maintenance of OTC drug purchases on patient medication records is usually not very practical."

3. Scores on attitudes toward pharmacist behavior concerning over-the-counter drugs generally were high--usually over 3.50. For both groups, the only item for which this is not true states that "I believe most pharmacists do not advise the patient that the OTC product they have chosen is of little value for the patient's condition."

4. Scores on attitudes toward Rx medications were not as high as were scores on the preceding items--for both groups, four of the seven items had scores below 3.00. It might be concluded, however, that responses to items in this part of the questionnaire are even more open to interpretation than is true elsewhere on the questionnaire. For example, it may not be completely clear that it is desirable for respondents to disagree with the item stating that "Patients may become alarmed about the physician's choice of drug if the pharmacist advises them regarding the toxicity of the drug."

5. Scores on attitudes concerning patient-pharmacist relationships were generally high - generally over 3.58. For both groups, the only item for which this is not true states that "Patients are more interested in the price of the Rx than special services the pharmacist may provide, such as advertisement, patient records, etc."

6. Scores on attitudes concerning physician-pharmacist relationships were not as high as were socres on most other parts of the questionnaire. This in part is because our "desirable-undesirable" characterization does not fit items in this section very well. Most of the items are concerned with whether physicians are receptive to suggestions and information from pharmacists. Perhaps it is realistic for respondents to have relatively low scores on these items.

7. Scores on attitudes concerning management of a pharmacy were generally high--usually over 3.50. These responses indicate that respondents think pharmacists should possess a wide variety of managerial skills.

8. Scores on attitudes concerning the pharmacist's responsibilities for drug use were all very high. For both groups, none of the seven items had a

mean score lower than 4.23 on the five-point scale. This means that both UMKC pharmacy students and the practicing pharmacists expressed strong and consistent attitudes emphasizing the pharmacist's ethical and professional responsibilities regarding the distribution of drugs. A good example is the item stating that "In my opinion the pharmacist must ensure that the prescription meets all the legal requirements," on which the means were 4.63 and 4.56 respectively, with standard deviations of only .62 and .66.

9. Scores on attitudes dealing with adequacy of preparation at the School of Pharmacy were generally high. For both groups, three of the six items had means of 4.18 or higher. However, two of the items had mean scores ranging from 3.38 to 3.49, relatively close to the "Uncertain-neutral" category on the five-point scale. These two items were: "I feel adequately prepared to institute new programs (unit dose, I.V. admixtures, patient profiles, etc.) in a hospital pharmacy," and "I feel adequately prepared to analyze and change managerial operations (pharmacy department, store arrangement, buying policies, etc.) of a community pharmacy."

10. Scores on attitudes dealing with the School of Pharmacy curriculum were lower than was true for most other parts of the questionnaire. None of the mean scores on the first four items with five response categories were above 3.41. However one also should recognize that these mean scores are still above the mid-point on the 5-point scale. In addition, it should be noted that a sizable majority of respondents in both groups said the curriculum had "the right amount" of emphasis (rather than too little or too much) on four of the last seven items with three response categories. Two items for which this was not true stated that "The curriculum of the School of Pharmacy contains enough course work in pharmacology, public health, and physiology" and "The curriculum of the School of Pharmacy contains enough course work in clinical pharmacy." For both these items, a majority or plurality of respondents answered "Needs more." In addition, a majority of

the practicing pharmacists said that the School of Pharmacy curriculum needs more course work in pharmacy management.

Comparisons Between Groups

To determine whether graduating seniors differed in their responses to the first 66 items from the practicing pharmacists, two-tailed t tests were calculated for each of the items. The t values and associated probability levels from this series of tests are shown in Table 1.

As indicated in Table 1, there were only nine items on which the two groups differed at the .05 level of probability or below. In fact, these were the only items for which the probability of a statistically significant difference was less than .10. When one keeps in mind that three or four items out of 66 can be expected to differ at the .05 level purely by chance, and when one notes the general similarities in the mean scores of the two groups, it is clear that the two groups of respondents generally share similar attitudes as measured by our questionnaire.

To test for differences on the last seven items, chi-square values were calculated using the percentages of respondents in each group who said the School of Pharmacy curriculum provided the "right amount" of emphasis on each item. These values and associated probabilities are shown in Table 1. The student sample differed from the practicing pharmacist sample at the .05 level only on the last item.

Items for which mean scores differed at the .05 level or better and the direction of these differences were as follows:

1. "The incidence of drug induced disease would probably decrease markedly if pharmacies maintained patient medication records" - Students were more likely to agree.

2. "Patient compliance will be better if the pharmacy maintains patient-medication records" - Students were more likely to agree.

3. "I would find it difficult to ask patients about their symptoms when advising about OTC drugs" - Students were more likely to agree.

4. "In my opinion the pharmacist should be able to recruit, train, and motivate pharmacy personnel" - Students were more likely to disagree.

5. "I believe the pharmacist should be able to develop and implement layout plans for the pharmacy" - Students were more likely to disagree.

6. "In my opinion the pharmacist should be familiar with contemporary electronic data processing techniques in financial management" - Students were more likely to disagree.

7. "I believe the pharmacist should consult with the patient at the time the prescription is dispensed" - Students were more likely to agree.

8. "I feel adequately prepared to assume the practice of pharmacy as the only pharmacist in the pharmacy" - Students were more likely to disagree.

9. "The curriculum of the School of Pharmacy provides sound preparation for the practice of pharmacy in the future" - Students were more likely to agree.

10. "The curriculum of the School of Pharmacy contains enough course work in pharmacy management (law, marketing, management, etc.)" - Practicing pharmacists were less likely to say "right amount," and more likely to say "need more."

This pattern of differences probably is indicative of differences in experience between the graduating seniors and the practicing pharmacists. Students are more likely to say that drug-induced disease would decrease and patient compliance would improve given maintenance of medication records and that pharmacists should consult with patients when dispensing drugs; these "optimistic" attitudes concerning the potential efficacy of medication records and the opportunities open to advise patients probably are tempered by the realities and pressures of the real world after new practitioners graduate from the School of Pharmacy. Conversely, recent graduates may overcome their reluctance to ask OTC drug-purchasers about their symptoms and may find they need more managerial preparation then they received once they begin practice as a pharmacist. Perhaps partly for this latter reason, our practicing pharmacist respondents are less likely to agree that the curriculum of the School of Pharmacy provides "sound preparation for the practice of pharmacy

in the future." Students, on the other hand, may feel less adequately prepared to begin practicing as the only professional in a pharmacy because they (understandably) have not had quite enough practical experience to feel fully confident about their ability as a pharmacist.

Scale Differences

In addition to examining differences on the items, we also calculated t-tests to determine whether the two groups of respondents differed on the eleven scales. The results are shown in Table 2. As shown in the table, the students and the practicing pharmacists generally have very similar attitudes regarding professional practice and preparation. The only two scales on which differences are significant at the .05 level (or even the .10 level) are "Emphasis on Patient Medication Records," on which the students have a higher mean score than the practicing pharmacists, and "Wide vs. Narrow Definition of Pharmacists' Managerial Responsibilities," on which the recent graduates have a higher mean ("wider definition") than the graduating seniors.

However, these two scales included five of the nine five-point items on which the attitudes of the students were found to differ from those of the pharmacists. To determine whether differences on the scales were wholly or largely due to these items, the scale scores were recomputed omitting the five items from their respective scales (items 2 and 5 omitted from "Emphasis on Maintenance of Patient Medication Records;" items 5, 6, and 9 omitted from "Wide vs. Narrow Definition of Pharmacists' Managerial Responsibilities"). T-test values calculated on the recomputed scales were .70 ($p = .48$) and 1.32 ($p = .19$), respectively. Thus we conclude that there are not systematic attitude differences on the scales except for the individual items on which the students and the recent graduates differed at or below the .05 level.

SUMMARY AND DISCUSSION

Questionnaires measuring attitudes regarding pharmacy were administered to 56 graduating seniors and 112 recent graduates of the UMKC School of Pharmacy. Factor analysis of the responses supported the construction of eleven scales measuring the following aspects of attitudes regarding pharmacy practice and preparation:

1. Positive vs. Negative Attitudes Toward Pharmacy as a Profession
2. Emphasis on Maintenance of Patient Medication Records
3. Positive vs. Negative Attitudes Regarding Pharmacist Behavior Concerning Over the Counter Drugs
4. Pharmacist Role in Informing Patients About Rx Medications
5. Positive vs. Negative View of Patient Behavior Related to Pharmacists' Advice
6. Positive vs. Negative View of Physician Behavior with Respect to Drugs
7. Wide vs. Narrow Definition of Pharmacists' Managerial Responsibilities
8. Active vs. Passive Pharmacist Role in Dispensing Drugs
9. Adequate vs. Inadequate Preparation at the School of Pharmacy
10. Adequate vs. Inadequate Preparation for a Hospital Pharmacy
11. Positive vs. Negative Views of the School of Pharmacy Curriculum

Analysis of the data indicated that factors derived from the responses were similar for the two groups of respondents and that information collected in the study was reliable. Both the graduating seniors and the practicing pharmacists tended to respond to items with answers considered to represent "desirable" attitudes. However, respondents indicated some uncertainty regarding their preparation for instituting new programs in a hospital pharmacy and for analyzing and changing managerial operations in a community pharmacy. Respondents also felt some uncertainty regarding the adequacy of the School of Pharmacy curriculum

(see the first four items in Table IJ) and believed that the curriculum of the School of Pharmacy should contain more course work on pharmacy, public health, physiology, and clinical pharmacy.

Further analysis indicated that the two groups of respondents differed on only ten items among the 73 on the questionnaire. Differences on these items indicated that recent graduates may become more pessimistic (or realistic) than are graduating seniors concerning the potential efficacy of medication records and the opportunities open to advise patients. The practicing pharmacists also were more likely to stress the need to improve preparation for managerial operations than were the graduating seniors. Analysis of the factor-based scales indicated that the two groups did not differ additionally beyond differences already identified on the ten individual items.

This paper has provided information on the development and utilization of a questionnaire to measure attitudes of pharmacy students and practicing pharmacists concerning professional practice and preparation. The questionnaire appears to provide reliable data and can be divided into eleven scales measuring differing aspects of attitudes regarding practice and preparation. A questionnaire of this sort can be used to obtain data on a number of important issues including the following:

1. Do the attitudes of pharmacy students change during their years in school?

2. Are specific aspects of the curriculum associated with changes in student attitudes?

3. Do the attitudes of new pharmacists change after they graduate from schools of pharmacy?

4. What aspects of pharmacy preparation need to be improved according to pharmacy students and practitioners?

5. Which professional attitudes emphasized in pharmacy schools may be unrealistic given the pressures faced by practicing pharmacists?

6. Which professional attitudes are not being effectively developed among students?

7. To what degree is a school of pharmacy succeeding in developing attitudes thought to be most important for future practice?

Table IA

Item and Factor Information Regarding Attitudes Toward Pharmacy as a Profession

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. The practice of pharmacy represents a high level of professional behavior.*	.57	.63	4.29	.49	4.13	.78	1.33	.19
2. One who practices pharmacy as a profession can expect to be a financial success.*	.35	.56	3.12	.85	2.94	.97	1.17	.24
3. The practice of pharmacy as a profession represents the performance of a social service.*	.42	.47	4.07	.68	4.02	.76	.45	.66
4. The practice of pharmacy represents an opportunity to work with many interesting people.*	.77	.65	4.21	.68	4.18	.69	.32	.75
5. The practice of pharmacy is a profession where one needs constantly to develop new skills and master new concepts and knowledge.*	.56	.63	4.59	.50	4.37	.97	1.62	.11
6. The practice of pharmacy is a profession in which one can use his/her education to help sick people.*	.83	.66	4.30	.66	4.24	.71	.55	.58
7. If I were just graduated from high school, I would still enter the pharmacy profession.*	.60	.52	3.59	.93	3.50	1.17	.50	.62
Percent of variance accounted for by the principal factor:	.37	.35						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table 1B

Item and Factor Information Regarding Attitudes Concerning Patient Medication Records

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. Patients receive better health care at pharmacies which maintain patient medication records.*	.84	.87	4.01	.92	3.86	.94	1.00	.32
2. The incidence of drug induced disease would probably decrease markedly if pharmacies maintained patient medication records.*	.71	.75	3.84	.97	3.39	.95	2.79	.01
3. Patient medication records need not be maintained for hospital out patients.	.29	.16	3.63	.93	3.68	1.01	.33	.74
4. The maintenance of OTC drug purchases on patient medication records is usually not very practical.	.32	.12	2.91	1.05	2.78	1.14	.70	.49
5. Patient compliance will be better if the pharmacy maintains patient medication records.*	.78	.66	3.50	.95	3.14	1.07	2.12	.04
6. I expect to keep patient medication records in my own pharmacy (as owner, manager or director of pharmacy services).*	.51	.63	4.29	.65	4.27	.73	.08	.94
Percent of variance accounted for by the principal factor:	.41	.36						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table 1C

Item and Factor Information Regarding Attitudes Toward Pharmacist Behavior Concerning Over the Counter Drugs

Item	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students $\bar{x}$	S.D.	Mean and Standard Deviation for Practicing Pharmacists $\bar{x}$	S.D.	t.	p.
1. I believe most pharmacists advise patients regarding OTC drug products on the basis of the profit to be made.	.57	.56	3.79	.68	3.88	.98	.61	.54
2. I believe most pharmacists do not advise the patient that the OTC product they have chosen is of little value for the patient's condition.	.48	.73	2.96	.93	2.92	1.07	.27	.79
3. Most OTC products are so clearly labeled with directions and indications that most patients do not need the pharmacist's advice.	.68	.30	3.96	.85	4.08	.86	.83	.41
4. In my opinion most pharmacists' OTC drug advice to the patient is based on their own experiences and reading of professional journals.*	.19	.47	3.77	.69	3.68	.96	.62	.54
5. In my opinion most pharmacists readily ask the patient about symptoms when advising about OTC drugs.*	.74	.72	3.55	.78	3.67	.94	.79	.43
6. I would find it difficult to ask patients about their symptoms when advising about OTC drugs.	.21	.60	4.14	.64	4.46	.73	2.79	.01
Percent of variance accounted for by the principal factor:	.27	.34						

*Strongly Disagree = 1; Strongly Agree - 5. For other items, Strongly Disagree - 5; Strongly Agree = 1.

Table 1D
Item and Factor Information Regarding Attitudes Toward Rx Medications

Item	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. I believe most pharmacists only advise patients concerning their Rx medications if the patient indicates that he or she is interested.	.56	.19	2.89	.99	2.77	.96	.79	.43
2. Patients may not take their Rx as prescribed if the pharmacist advises them regarding side effects of the drug.	.77	.74	2.79	.87	2.99	1.06	1.25	.21
3. Patients may become alarmed about the physician's choice of drug if the pharmacist advises them regarding the toxicity of the drug.	.81	.79	2.50	.85	2.40	.90	.68	.50
4. In my opinion most pharmacists readily ask the patient about symptoms when advising about Rx medications.*	.47	.48	2.86	.86	2.69	.96	1.12	.27
5. Patients who have been on maintenance Rx's for three months or more need not be advised about their Rx medications.	.38	.10	3.86	.61	3.88	.78	.15	.88
6. Pharmacists' attempts to advise regarding Rx medications will cause the patient to assume that the drug or dosage is wrong or unusual.	.39	.64	4.00	.47	4.01	.77	.08	.94
7. I would find it difficult to ask patients about their symptoms when advising about Rx medications.	.45	.48	4.17	.72	4.16	.72	.15	.88
Percent of variance accounted for by the principal factor:	.33	.30						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree = 5; Strongly agree = 1.

Table 1E
Item and Factor Information Regarding Attitudes Concerning Patient-Pharmacist Relationships

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students $\bar{x}$	S.D.	Mean and Standard Deviation for Practicing Pharmacists $\bar{x}$	S.D.	t.	p.
1. Patients who have been adivsed by the pharmacist about the use of Rx medication are more likely to comply with the proper dosage regimen than those who were not advised.*	.51	.50	4.11	.73	4.20	.71	.53	.60
2. Most patients appreciate the pharmacists' efforts to discuss their Rx's, disease states, etc.*	.73	.72	4.14	.75	4.26	.68	1.01	.32
3. I believe most patients readily accept a pharmacist's advice on OTC drugs.*	.58	.78	4.00	.54	3.96	.78	.39	.70
4. In my opinion most patients will accept the pharmacist's OTC recommendations over a highly advertised product.*	.46	.77	3.68	.64	3.58	.86	.76	.45
5. Most patients are quite willing to discuss their symptoms with the pharmacist.*	.76	.69	3.63	.65	3.74	.74	.99	.32
6. Most patients regard pharmacists as knowledgeable in regard to their medical problems.*	.60	.62	3.82	.66	3.88	.64	.59	.56
7. Patients are more interested in the price of the Rx than special services the pharmacist may provide, such as advertisement, patient records, etc.	.57	.32	2.61	1.07	2.36	.91	1.58	.12
Percent of variance accounted for by the principal factor:	.37	.42						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree - 5; Strongly Agree = 1.

Table 1F

Item and Factor Information Regarding Attitudes Concerning Physician-Pharmacist Relationships

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. In my opinion most physicians readily accept the pharmacist's suggestions on drug choice.*	.67	.77	2.98	.98	2.74	1.00	1.48	.14
2. I believe most pharmacists readily advise physicians about drug interactions, inappropriate drug therapy, etc.*	.54	.58	2.53	.97	2.33	.84	1.41	.16
3. Most physicians appreciate pharmacists advising them about drug interactions.*	.69	.69	3.20	.86	3.20	.94	.00	1.00
4. Physicians usually do not change drugs when advised of a drug interactions.	.56	.62	3.34	.84	3.30	.90	.25	.80
5. Physicians regard pharmacist's advice on treatment as an encroachment of their field of experience.	.70	.66	2.56	.91	2.63	.92	.53	.59
6. I believe most physicians do not want the pharmacist to advise patients in regard to their medical problems.	.55	.57	3.26	.79	3.13	.90	.88	.38
7. I would not hesitate to call a physician about the choice of drug if I felt it might be inappropriate.*	.41	.38	3.79	.85	3.85	1.03	.39	.70
Percent of variance accounted for by the principal factor:	.36	.38						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table 1G

Item and Factor Information Regarding Attitudes Concerning the Management of a Pharmacy

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students $\bar{x}$	S.D.	Mean and Standard Deviation for Practicing Pharmacists $\bar{x}$	S.D.	t.	p.
1. It is my opinion that the pharmacist should be able to interpret a financial statement.*	.77	.73	4.05	.64	4.02	.89	.27	.79
2. I believe a pharmacist should be able to prepare a yearly budget for the pharmacy.*	.86	.85	3.86	.72	4.06	.83	1.57	.12
3. I believe the pharmacist should be able to write a job description for all pharmacy personnel.*	.72	.76	4.18	.58	4.34	.74	1.42	.16
4. In my opinion the pharmacist should be the only one in the pharmacy to make purchasing decisions about prescription drugs.*	.08	.32	3.70	.99	3.60	1.23	.52	.61
5. In my opinion the pharmacist should be able to recruit, train, and motivate pharmacy personnel.*	.64	.54	4.21	.41	4.41	.56	2.32	.02
6. I believe the pharmacist should be able to develop and implement layout plans for the pharmacy.*	.87	.62	3.93	.76	4.19	.73	2.14	.03
7. I believe the pharmacist should be able to prepare a financially acceptable and competitively priced compensation plan for pharmacy personnel.*	.77	.82	3.82	.72	3.98	.91	1.15	.25
8. In my opinion the pharmacist should be able to identify, classify and recover all costs of pharmacy operations including a fair and adequate return on invested capital.*	.80	.87	4.01	.80	4.19	.81	1.28	.20
9. In my opinion the pharmacist should be familiar with contemporary electronic data processing techniques in financial management.*	.54	.64	3.38	.98	3.79	.89	2.71	.01
Percent of variance accounted for by the principal factor:	.51	.49						

*Strongly Disagree = 1; Strongly Agree = 5. For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table 1H

Item and Factor Information Regarding Attitudes Concerning Pharmacists' Responsibilities for Drug Use

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students $\bar{x}$	S.D.	Mean and Standard Deviation for Practicing Pharmacists $\bar{x}$	S.D.	t.	p.
1. I believe the pharmacist should determine if the patient is taking the drug in the prescribed manner.*	.73	.49	4.34	.58	4.23	.63	.97	.33
2. I believe the pharmacist should consult with the patient at the time the prescription is dispensed.*	.71	.76	4.59	.53	4.36	.60	-2.26	.03
3. In my opinion the pharmacist must ensure that the prescription meets all the legal requirements.*	.66	.52	4.63	.62	4.56	.66	.51	.61
4. In my opinion the pharmacist must ensure that the patient receives the prescribed medication.*	.74	.77	4.63	.65	4.55	.67	.65	.52
5. I believe that the pharmacist should review the patient's medication record before filling the patient's prescription.*	.71	.67	4.32	.63	4.23	.76	.68	.50
6. In my opinion the pharmacist should add all pertinent information to the prescription container to clarify directions and ensure the patient takes the medication properly.*	.46	.63	4.42	.71	4.53	.62	1.01	.31
7. I believe the pharmacist must ensure that the patient understands the storage requirements for certain specific products.	.78	.75	4.55	.50	4.52	.65	.27	.79
Percent of variance accounted for by the principal factor:	.48	.44						

*Strongly Disagree = 1; Strongly Agree = 5; For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table II

Item and Factor Information Regarding Attitudes Concerning Adequacy of Preparation

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
			$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. I feel adequately prepared to assume the practice of pharmacy as the only pharmacist in the pharmacy.*	.78	.89	4.18	.69	4.45	.72	2.30	.02
2. I feel adequately prepared to assume the practice of pharmacy as one of two pharmacists in the pharmacy even though I would be the only pharmacist on either the morning or evening shift.*	.85	.89	4.46	.54	4.60	.59	1.42	.16
3. I feel adequately prepared to assume practice as a pharmacist in a hospital.*	.64	.23	3.70	1.08	3.71	1.23	.09	.93
4. I feel adequately prepared to assume practice as a pharmacist in a community pharmacy.*	.74	.80	4.34	.67	4.41	.75	.60	.55
5. I feel adequately prepared to institute new programs (unit dose, I.V. admixtures, patient profiesl, etc.) in a hospital pharmacy.*	.65	.25	3.38	1.14	3.39	1.26	.09	.93
6. I feel adequately prepared to analyze and change managerial operations (pharmacy department layout, store arrangement, buying policies, etc.) of a community pharmacy.*	.12	.71	3.38	.86	3.49	1.08	.70	.49
Percent of variance accounted for by the principal factor:	.46	.44						

*Strongly Disagree = 1; Strongly Agree = 5; For other items, Strongly Disagree = 5; Strongly Agree = 1.

Table 1J

Item and Factor Information Regarding Attitudes Toward the School of Pharmacy Curriculum

Items	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Anaylsis	Mean and Standard Deviation for Students $\bar{x}$	S.D.	Mean and Standard Deviation for Practicing Pharmacists $\bar{x}$	S.D.	t.	p.
1. The School of Pharmacy curriculum is excellent preparation for the practice of pharmacy.*	.82	.86	3.31	.94	3.10	1.08	1.28	.20
2. The curriculum of the School of Pharmacy provides sound preparation for the practice of pharmacy as it is today.	.74	.88	3.25	.97	3.21	1.07	.29	.77
3. The curriculum of the School of Pharmacy provides sound preparation for the practice of pharmacy in the future.*	.78	.86	3.41	.83	2.95	1.03	2.84	.01
4. The curriculum of the School of Pharmacy provides sound preparation to keep abreast of changes in the practice of pharmacy in the years to come.*	.88	.84	3.40	.76	3.21	1.06	1.11	.27
			Number by Response Category for Students**		Number by Response Category for Practicing Pharmacists**		χ^2	p
			1 2 3		1 2 3			
5. The School of Pharmacy curriculum contains enough course work in the area of basic sciences (chemistry, biology, physics, mathematics.)	.25	.13	1 49 5		15 89 8		1.72	.20
6. The curriculum of the School of Pharmacy contains enough course work in the humanities and arts (English, psychology, art, literature, sociology, history, languages, etc.)	-.07	.02	9 35 11		20 80 12		.70	.75

Table 10 (continued)

	Loadings for Student Factor Analysis	Loadings for Practicing Pharmacists Factor Analysis	Number by Response Category for Students			Number by Response Category for Practicing Pharmacists			χ^2	p
			1	2	3	1	2	3		
7. The curriculum of the School of Pharmacy contains enough course work in pharmacology, public health and physiology.	.05	-.17	0	23	32	2	47	63	.01	1.00
8. The curriculum of the School of Pharmacy contains enough course work in pharmaceutical chemistry and biochemistry.	.38	.08	7	40	8	31	71	10	1.04	.30
9. The curriculum of the School of Pharmacy contains enough course work in pharmaceutics (dispensing, basic pharmacy, physical pharmacy, compounding, preparation, pharmach technology and biopharmaceutics).	-.10	.38	6	31	8	23	59	29	2.62	.10
10. The curriculum of the School of Pharmacy contains enough course work in clinical pharmacy.	.15	.01	11	17	27	6	28	76	.38	.60
11. The curriculum of the School of Pharmacy contains enough course work in pharmacy management (law, marketing, management, etc.).	-.30	-.06	6	33	16	12	42	56	6.17	.01
Percent of variance accounted for by the principal factor:	.26	.48								

*Strongly Disagree = 1; Strongly Agree = 5. For other items, 1 = Need Less; 2 = Right Amount; 3 = Need More.

**1 = Need less; 2 = right amount; 3 = need more.

Table 2

Differences Between Students and Practicing Pharmacists on Eleven Scales Delineating Attitudes Involving Professional Practice and Preparation

Scale	Mean and Standard Deviation for Students		Mean and Standard Deviation for Practicing Pharmacists		t.	p.
	$\bar{x}$	S.D.	$\bar{x}$	S.D.		
1. Positive vs. Negative Attitudes Toward Pharmacy as a Profession	28.18	2.85	27.38	3.56	1.45	.15
2. Emphasis on Maintenance of Patient Medication Records	15.64	2.70	14.69	2.72	2.15	.03
3. Positive vs. Negative Attitudes Regarding Pharmacist Behavior Concerning Over the Counter Drugs	10.30	1.56	10.46	2.22	.49	.63
4. Pharmacist Role in Informing Patients About Rx Medications	16.32	2.41	16.25	2.81	.16	.87
5. Positive vs. Negative View of Patient Behavior Related to Pharmacists' Advice	23.38	2.49	23.59	3.03	.46	.65
6. Positive vs. Negative View of Physician Behavior with Respect to Drugs	21.64	3.69	21.18	4.00	.73	.47
7. Wide vs. Narrow Definition of Pharmacists' Managerial Responsibilities	31.45	4.21	32.97	4.71	2.05	.04
8. Active vs. Passive Pharmacist Role in Dispensing Drugs	31.48	2.89	30.98	3.01	1.03	.31
9. Adequate vs. Inadequate Preparation at the School of Pharmacy	12.98	1.66	13.45	1.84	1.63	.11
10. Adequate vs. Inadequate Preparation for a Hospital Pharmacy	7.07	2.12	7.11	2.39	.09	.93
11. Positive vs. Negative Views of the School of Pharmacy Curriculum	13.38	2.88	12.48	3.72	1.58	.12